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10/602,393	06/23/2003	Adrian P. Stephens	1020.P16723	1695

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EXAMINER	
PARK, JUNG H	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/602,393	STEPHENS, ADRIAN P.	
	Examiner	Art Unit	
	Jung Park	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06/27/2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22 and 24-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Remark

1. This communication is considered fully responsive to the Amendment filed on 06/27/2007.

a. An objection to the abstract is not withdrawn since it has not been amended.

b. An rejection under USC 112 2nd is withdrawn since it has being amended accordingly.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 28, 29, and 35-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Fischer et al. (US 2002/0089927, "Fischer").

Regarding claim 28, Fisher discloses a method of allocating time during a transmit opportunity comprising:

- detecting a channel quality or other criteria (if unsuccessful, i.e. frame failure, see ¶.57); and

- reserving a portion of a transmit opportunity (specify a retry time duration, see ¶.57) for expected retries (how many times to retry the frame, see ¶.57) based upon the detected channel quality or other criteria (if unsuccessful, how many times to retry the frame, see ¶.57).

Regarding claim 29, Fischer discloses, "wherein the detecting is selected from the group comprising: detecting a bit error rate; detecting packet failure or a packet failure rate; detecting packet retries; detecting a signal-to-noise ratio; detecting a received signal strength (¶.57)."

Regarding claim 35, Fischer discloses a method comprising:

- receiving permission to transmit information (TXAVAIL, see ¶.93) during a transmit opportunity (wireless medium, see ¶.93 and also fig.11);
- detecting one or more criteria (frame failure, see ¶.57); and
- selecting one of the following transmit modes based upon the detected criteria:

a) a transmit mode in which packets are transmitted so as to decrease latency for at least some of the packets (not delayed, see ¶.58); and

b) a transmit mode in which packets are transmitted so as to increase data throughput (improvement of throughput, see ¶.58).

Regarding claim 36, Fischer discloses, "wherein the criteria comprises a Quality of Service (QoS) field or QoS value or other value (QoS, see ¶.58)."

Regarding claim 37, Fischer discloses, "wherein transmit mode a) comprises reserving a specific portion of a transmit opportunity for retries (retry time duration, see ¶.57), and transmit mode b) comprises transmitting as many packets as possible during the transmit opportunity without specifically reserving a portion of the transmit opportunity for retries (using retry count, see ¶.57)".

4. Claims 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Benveniste (US 2002/0154653, "Benveniste").

Regarding claim 15, Benveniste discloses a wireless system comprising: a processor (a processor, not shown in fig.2, is described in ¶.249), the processor adapted to calculate a probability of packet failure (congestion estimates ...failure, see ¶.41), to calculate an expected maximum number of retries based on the calculated probability of packet failure (number of re-transmission, see ¶.41 & 44) and a probability distribution (probability distribution, see ¶.44 and ¶.156-158); and to reserve a portion of a transmit opportunity for retries based upon the expected number of retries (reservation messages ...number of retransmission attempts, see fig.1D; ¶.41 and ¶.44).

Regarding claim 16, Benveniste discloses, "wherein the processor to calculate an upper bound for the initial data burst based upon the expected maximum number of retries (number of retransmission, see ¶.44) and the size of the transmit opportunity (window size, see ¶.41)."

Regarding claim 17, Benveniste does not explicitly disclose, "wherein the probability distribution comprises a Binomial distribution". The binomial distribution is used to characterize the number of successes over a series of observations (or trials), where each observation and plays an important role in statistics, as it is likely the most frequently used distribution to describe discrete data. Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the

Binomial distribution as the probability distribution function of Benveniste in order to have more accurate estimation values than other distribution functions.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer in view of Ergen (IEEE 802.11 Tutorial, "Ergen").

Regarding claim 1, Fischer discloses a wireless system comprising:

- a memory (203 & 205 fig.2);

- a processor (CPU, see 201 fig.2) coupled to the memory (as shown in fig.2), the processor to allocate a first portion of a transmit opportunity for an initial data (transmission interval for frame F1, see 1101 fig.11 and ¶.77) and to allocate a second portion of the transmit opportunity for other operations including retries (intervals including retries, see fig.11 and ¶.77).

Fischer discloses the initial data, but silent on, "data burst". However, Ergen discloses that medium is reserved for fragments transmitted in burst (see pg.30, ¶.1 in sec.2.2.13 and pg.23, ¶.2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the reservation method for burst data taught by Ergen into the first frame F1 disclosed by Fischer in order to reduce transmission errors by avoiding competition for the medium (Ergen, see sec.2.2.13).

Regarding claim 2, Fischer discloses, "wherein the wireless system allocates the second portion of the transmit opportunity to retry any failed packets of the initial data burst, if necessary (No ACK & F1 retry, see fig.11)."

Regarding claim 3, Fischer discloses, "wherein the other operations are one or more selected from the group comprising: retry one or more packets in the initial data burst that failed, if any packets failed; transmit another initial data burst of packets if there is sufficient time in the transmit opportunity; release control of a channel back to a channel access controller; and reallocate a first sub-portion of the second portion for a second initial data burst and a remainder of the second portion for other operations (fig.11 and ¶.77)."

Regarding claim 4, Fischer discloses, "wherein the wireless system is adapted to allocate the first portion and the second portion based upon one or more detected criteria (unsuccessful, see ¶.57)."

Regarding claim 5, Fischer discloses, "wherein the wireless system is adapted to allocate the first portion and the second portion based upon a detected channel condition (¶.57)."

Regarding claim 6, Fischer discloses, "wherein the detected channel condition is selected from the group comprising: received signal strength; detected packet errors or failures; received bit error rate; measured packet failure; and other indicia of the probability of packet failure (¶.16; ¶.57)."

Regarding claim 7, Fischer discloses, "wherein the wireless system is adapted to further to calculate an upper bound for the initial data burst, and the wireless system to transmit packets of the initial data burst up to the upper bound (specified number of times, see ¶.18 and ¶.57)."

Regarding claim 8, Fischer discloses, "wherein the wireless system is further adapted to interrupt or stop the transmission of packets of the initial data burst when the upper bound is met, and then transmit any retries, if necessary, within the same transmit opportunity (fig.11 and ¶.77)."

Regarding claim 9, Fischer discloses, "wherein the wireless system further comprises an antenna, a transceiver coupled to the antenna and to the processor (fig.2)".

Regarding claim 10, Fischer discloses a wireless system comprising:

- a memory (203 & 205 fig.2); and
- a processor (CPU, see 201 fig.2), the processor to estimate a number of packet retries for a data (retry strategy function and how many times, see ¶.58) based upon one or more detected criteria (if unsuccessful, see ¶.57), the wireless system to reserve a portion of a transmit opportunity for the estimated retries (how many times, see fig.11 and ¶.58) and then to transmit the data and any necessary retries within the same transmit opportunity (fig.11 and ¶.57-58).

Fischer discloses the data, but silent on, "data burst". However, Ergen discloses that medium is reserved for fragments transmitted in burst (see pg.30, ¶.1 in sec.2.2.13 and pg.23, ¶.2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the reservation method for burst data taught by Ergen into the frame disclosed by Fischer in order to reduce transmission errors by avoiding competition for the medium (Ergen, see sec.2.2.13).

Regarding claim 11, it is a claim corresponding to claim 9 and is therefore rejected for the similar reasons set forth in the rejection of claim 9.

Regarding claim 13, it is a claim corresponding to claims 1 & 9 and is therefore rejected for the similar reasons set forth in the rejection of claims 1 and 9.

Regarding claim 14, Fischer discloses, "wherein the wireless system allocates the second portion of the transmit opportunity to retry any failed packets of the initial data burst, if necessary, wherein the initial data burst and the retries are transmitted in the same transmit opportunity (fig.11 and ¶.77)."

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer in view of Ergen and further in view of Benveniste (US 2002/0154653, "Benveniste").

Regarding claim 12, Fischer and Ergen lack what Benveniste discloses, "wherein the processor to estimate the number of packet retries based upon one or more of a measured probability of packet error and a probability distribution (¶.156-158 and also see ¶.44)." Therefore, it would have been obvious to one of ordinary skill in the art at the

time of applicant's invention to apply the method of estimating retransmission as taught by Benveniste into the method of Fischer and Ergen in order to improve transmission channel allocation efficiently.

8. Claims 18-22, 24-27, and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer in view of Benveniste.

Regarding claim 18, it is a claim corresponding to claim 1, except the limitation of "receiving permission to transmit information during a transmit opportunity". Fischer further discloses, "receiving permission to transmit information during a transmit opportunity (Tx Available, see ¶.93) and is therefore rejected for the similar reasons set forth in the rejection of claim 1.

Regarding claims 19-22, they are claims corresponding to claims 4, 5, 6, & 3, respectively and are therefore rejected for the similar reasons set forth in the rejection of the claims.

Regarding claim 24, Fischer discloses, "wherein the receiving permission to transmit information during a transmit opportunity comprises at least one of: requesting permission to transmit data over a channel; and receiving permission to transmit data over the channel (Tx Available, see ¶.93)."

Regarding claim 25, Fischer discloses, "wherein the receiving permission to transmit information during a transmit opportunity comprises requesting (request, ¶.58)

and receiving permission to transmit during a scheduled transmit opportunity (Tx Available, see ¶.93)".

Regarding claim 26, it is claim corresponding to claims 18, 20, & 21 and is therefore rejected for the similar reasons set forth in the rejection of claims 18, 20, & 21.

Regarding claim 27, it is claim corresponding to claim 3 and is therefore rejected for the similar reasons set forth in the rejection of claim 3.

Regarding claim 30, it is a claim corresponding to claim 26 and is therefore rejected for the similar reasons set forth in the rejection of claim 26.

Regarding claim 31, Fischer discloses, "wherein the criteria comprises a Quality of Service (QoS) field or QoS value or other value (QoS, see ¶.57)."

Regarding claim 32, Fischer discloses, "wherein transmit mode a) relies upon one or more subsequent transmit opportunities or channel accesses to transmit one or more retries associated with the initial data burst (fig.11 and ¶.58)."

Regarding claim 33, it is a claim corresponding to claims 18 & 19, except the computer readable medium. However, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention was made to use software-based machines. The benefit using computer-readable medium is that program can be

changed and upgraded for new features and is therefore rejected for the similar reasons set forth in the rejection of claims 18 and 19.

Regarding claim 34, it is a claim corresponding to claim 20 and is therefore rejected for the similar reasons set forth in the rejection of claim 20.

Allowable Subject Matter

9. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments with respect to claims 1, 15, 28, and 35 have been considered but are not persuasive.

At pages 11-12, regarding to claim 28, applicant argues that Fischer fails to teach, "detects the channel quality or other criteria and then reserves a portion of the transmit opportunity for expected retries based upon the detected channel quality or other criteria."

In reply, Fischer discloses all the elements as described in ¶.57. The claimed "detects the channel quality or other criteria" read on "if the initial frame delivery attempt is unsuccessful."

The claimed "reserves a portion of the transmit opportunity" read on "specified along with a frame life time ...the frame is retried up to the specified number of times."

The claimed "for expected retries" read on "how many times to retry the frame" and the "based upon the detected channel quality or other criteria" read on "if unsuccessful, how many times to retry the frame." Therefore, the examiner respectively disagrees.

At pages 12, regarding to claim 35 which recites features similar to those recited in claim 28, applicant argues that Fischer fails to teach all the elements of the claimed subject matter.

In reply, Fischer discloses all the elements as rejected in claim 35 and as described in the response of claim 28. Therefore, the examiner respectively disagrees.

At page 13, regarding to claim 15, applicant argues that Benveniste fails to teach, "the processor adapted to calculate a probability of packet failure, to calculate an expected maximum number of retries based on the calculated probability of packet failure and a probability distribution; and to reserve a portion of a transmit opportunity for retries based upon the expected number of retries."

In reply, Benveniste discloses all the elements as rejected in claim 15. The examiner suggests pointing out which claim limitations are not disclosed by the reference.

The claimed "the processor adapted to calculate a probability of packet failure" read on "statistical distribution ...setting of mean and variance ...failure" as described in ¶.41."

The claimed "calculate an expected maximum number of retries based on the calculated probability of packet failure" read on "probability distribution used to generate

backoff retry adjustment functions" as described in ¶.44 and "the backoff procedure is repeated up to a maximum number of times" as described in ¶.120. That is, the maximum number of retry times is required to be calculated by retry adjustment functions using probability distribution.

The claimed "reserve a portion of a transmit opportunity for retries based upon the expected number of retries" read on "reservation messages ...number of retransmission attempts" as shown in Fig.1D and described in ¶.44. Therefore, the examiner respectively disagrees.

At pages 14-15, regarding to claim 1, applicant argues that the cited reference, taken alone or in combination, fail to teach or suggest, "allocate a first portion of a transmit opportunity for an initial data burst and to allocate a second portion of the transmit opportunity for other operations including retries."

In reply, Fischer discloses all the elements as rejected in claim 1. The examiner suggests pointing out which claim limitations are not disclosed by the reference.

The claimed "allocate a first portion of a transmit opportunity for an initial data" read on "frame F1 is transmitted during the first interval 11" as shown in Fig.11 and described in ¶.77.

The claimed "allocate a second portion of the transmit opportunity for other operations including retries" read on "F1 is retried as shown at 1105 illustrated as F1 Retry" as described in ¶.77.

Fischer discloses the initial data, but silent on, "data burst". However, Ergen discloses that medium is reserved for fragments transmitted in burst as described in pg.30, sec.2.2.13, ¶.1 and pg.23, ¶.2 with the motivation of reducing transmission errors

by avoiding competition for the medium as suggested by Ergen in sec.2.2.13. Therefore, the examiner respectively disagrees.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung Park whose telephone number is 571-272-8565. The examiner can normally be reached on Mon-Fri during 6:15-3:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571-272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JP

Jung Park
Patent Examiner

EDAN S. ORGAD
SUPERVISORY PATENT EXAMINER

Edan Orgad 9/4/07